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Article

Enhancing Future Driven Design Education Through Moodboards

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Abstract

This manuscript addresses the creation of a set of guidelines for the composition of moodboards as outputs that visualise the research findings from a metadesign process. The guidelines, resulting from company-driven consulting research, intend to aid both the metadesign process and its teaching, understanding its professional and practical application. The exploratory value in moodboards enables design apprentices to develop futures-oriented creative and analytical skills by codifying values and behaviours. Encouraging this discussion might help build a comprehensive theoretical foundation to guide the educational process on the use of moodboards.

Keywords

Moodboards, Metadesign, Trend Research, Visualisation Tools, Design Futures

Introduction and conceptual grounds

Integrating futures literacy into design education fosters a practice that sets responsible values across future design practitioners and supports the hypothesis of a Design Futures disciplinary area that is rising. The relationship between Futures Studies and design meet at a common aim, creating alternative futures to present and yet-to-be uncertainties (Saritas & Nugroho, 2012). Design intrinsically includes an awareness of the future, not only because it creates goods that imply certain responsibilities in its lifecycle but also because it may envision and shape new values. Both disciplines share tools and methods, applying them in a transdisciplinary form (Celi & Colombi, 2020).

This manuscript presents part of the results of a research project regarding the role of moodboards in design, specifically in metadesign education, which has an overall future vision. The core of the research is based on the results of a consulting project developed inside a research laboratory, which we continued to evolve by adding desk research, case studies and testing phases. The objective was to understand how we could enhance visualisation outcomes in the design practice, where the focus was made on the creation process, including design apprentices and teachers.

If we understand design "as the momentary coalescence of future possibilities materialised today" (Marenko & Brassett, 2015:6), designers have the possibility and responsibility to empower their ways of knowing and doing into shaping the future. In the overlapping between design, futures, and education, we find the metadesign approach (Fig.1), a central part of design education which provides the meta-framework that oversees the entire project.

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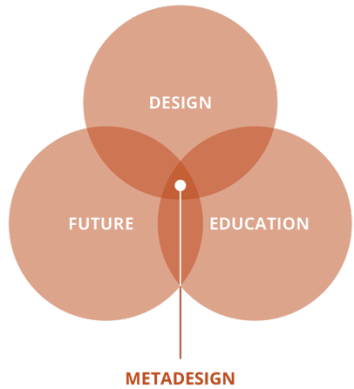

Figure 1. Overlapping between the themes

This manuscript is interested in amplifying specific knowledge on metadesign, a term coined by Andries Van Onck (1964) that refers to an analytical program composed of strategic activities aimed at guiding and constructing the project, defining its framework and meanings by codifying, and translating the signals picked up from the surrounding cultural context (Celaschi & Deserti, 2007; Celi, 2012). Metadesign presents an intrinsic forward-thinking quality that connects design and futures and is commonly concluded with a visual moodboard (Fig.2).

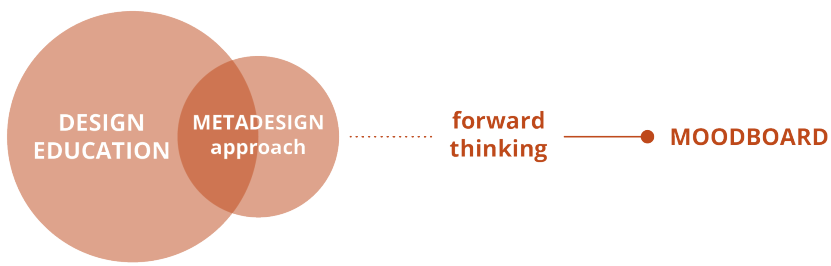

Figure 2. Moodboard as a tool for forward-thinking

Derived from the fashion field, moodboards (Fig.3) are a powerful narrative graphic tool composed of a consistent set of iconographic elements that express a specific but open-ended design direction; it is not descriptive of the product but conveys its meaning and emotions. The focus is to anticipate the sensory and emotional relationship between a product that does not yet exist and its end user (Rieuf et al., 2016). Visual media such as moodboards go far beyond words: they can communicate feelings, facilitate the design process, and stimulate creativity. For these reasons, they are introduced to art and design students.

Figure 3. A moodboard

Regardless of their relevancy, their use has rarely been analysed (Setchi & Bouchard, 2010) or exploited. Exploring this topic could foster discussions that build a comprehensive theoretical basis to guide the educational process on the use of moodboards, aiding both teachers and students. Considered indicators of design maturity, moodboards could be perceived as knowledge drivers that enrich future visions, as a new concept for future literacy, allowing students to articulate their thinking (Garner & McDonagh-Philp, 2001), and harness a set of skills and sensitivities that no longer concern only the result, but the entire system as well.

The fact that human communication is mainly non-verbal is neglected in favour of verb-centric methods that are neither intuitive nor immediate for presenting product research. This is the case for moodboards, which show an overall un-valorisation; they are not understood fully nor applied effectively. Few students can grasp its potential (Setchi & Bouchard, 2010), and the lack of curiosity that results in limited novelty exploration inevitably leads to poor research and, consequently, to the production of low-quality moodboards that are difficult to understand. There is still no articulate and precise guide of what constitutes and distinguishes a quality moodboard, which becomes a problem, especially for faculty members evaluating and providing feedback to students (Garner & McDonagh-Philp, 2001). This is also why experimenting is essential for teaching, creating a feeding loop of research and training.

The reported analysis of the role of the moodboard as a crucial component of the metadesign approach was carried out through a consulting project for a material manufacturing company. Motivated by a growing interest in incorporating anticipation principles, companies seek to invest in a range of metadesign research. In this case, moodboards were one of the resulting outputs, together with the deductive development of a guideline template for moodboard creation as a step-by-step manual.

The proposed guidelines are addressed at students attending design-oriented careers, aiming to frame the composition of moodboards as instruments to visualise the research findings, mainly from the trend research phase (Fig.4). The use of moodboards enables the translation of these findings into summarised and visual components for the project's concept. Trend research is defined as detecting weak signals (Naisbitt, 1982) or anomalies in contemporary culture that indicate that something is changing (Vejlgaard, 2008), evidencing its anticipatory agency.

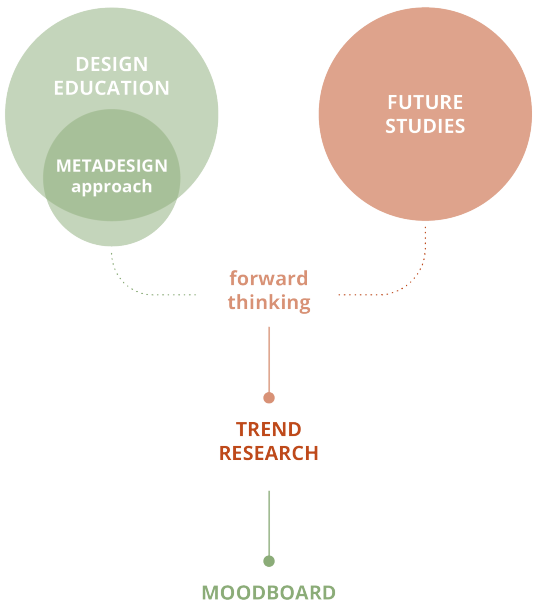

Figure 4. Trend research as a link between Design Education and Future

Involving tools obtained from a business environment brings together research and teaching through experimentation in design education. This experimental and reflective characteristic is intrinsic to design, mixing practice with reflection on the practice itself (Schon, 1983; Celi & Spagnoli, 2019). This methodology exhibits how the guidelines would be applied in a professional context enabling students to witness the efficiency of using moodboards as part of their design process.

To successfully achieve our goal, the presented research was organised in diverse phases, each with specific methodological approaches. A first understanding of the context and theoretical contents of metadesign and futures literacy was unfolded using desk research. Subsequently, the deepening of the functions and implications of moodboards was explored through the review of case studies. An englobing company-driven consultancy project aided in defining and constructing the guideline template, strengthening characteristics related to the professional design practice. Finally, a first-run test of the guidelines was carried out in one of the design courses, with data collected from observation and a structured survey.

The manuscript is structured as follows; this first section, Introduction and conceptual grounds, explains the main theoretical definitions and framework. The second section, Metadesign and futures, explores their relationship through deepening futures literacy in design education. The third section, Moodboards as visualisation tools in metadesign research, discusses the importance of visualisation concerning trend research, between metadesign and futures, and the role of moodboards in design education and future literacy. The fourth section, Guidelines and their creation, examines the methodologies employed to construct the guidelines, focusing on how the consulting project supported the process. The final section, First test and results, displays the results of the preliminary testing of the guidelines and their analysis.

Metadesign and futures

A common consensus within the design community and around design education states that there is an imminent need for updating its curricula, recognising the “specific tools, techniques and creative processes” that designerly ways of knowing and doing employ (Celi & Spagnoli, 2019). A novel vision of design education that integrates futures literacy could be described by the anticipatory character that defines design.

Miller (2007, 2018) defines futures literacy as a capability or skill learnt and used to “decide why and how to use

their imagination to introduce non-existing future into the present" (Miller, 2018). Futures literacy enables the conscious and deliberate use of the future according to its context (Miller & Sandford, 2018) while allowing us to explore the present's potential amid possible, probable, and desirable futures envisioned (Miller, 2007).

Similarly, metadesign, with the ability to produce multiple design directions, is one of the ways design employs its power to realise and shape futures as "metastories that activate design dialogues" (Celi & Colombi, 2020), embodying the push for possible and plausible futures, and consecutively the probable ones. The relationship between metadesign and futures is described by the common area on how knowledge about the future and its interpretation relies on the communicative power of symbols (Steffen, 2010). Understanding these symbols and their value is intrinsic to foresight, which includes the intertwining of design and futures studies, enabling the imagination of possible futures in response to change and uncertainty (Fuller & Loogma, 2009).

Presenting metadesign as an innovative and future-oriented framework, we highlight its importance regarding the didactic program of the design school since it provides an overall program on learning how to learn, trigger, and develop meta-cognitive skills and abilities that foster the autonomous decoding of information (Celi, 2012). These are crucial for defining the design parameters, problem-setting, and building a framework that sustains the project's research, conceptualisation, and development.

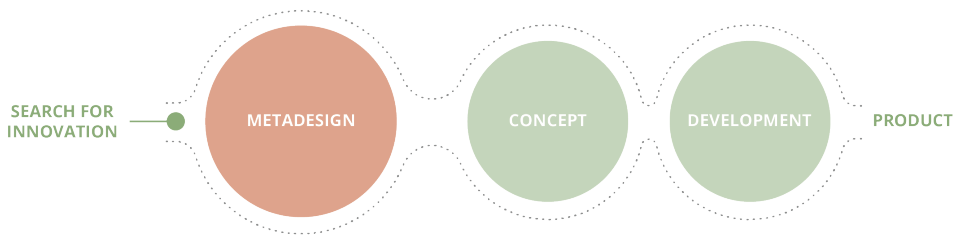

Figure 5. The design process

The design process can be subdivided into three phases (Fig.5): Metadesign, concept, and development. The initiating motivation of this three-phase process could be a search for innovation, while the output is a final product in any of its possible shapes (and regarding any design practice such as service system, communication, fashion, etc.). This research has been developed in the industrial product design discipline; therefore, we speak of a physical product as the final output.

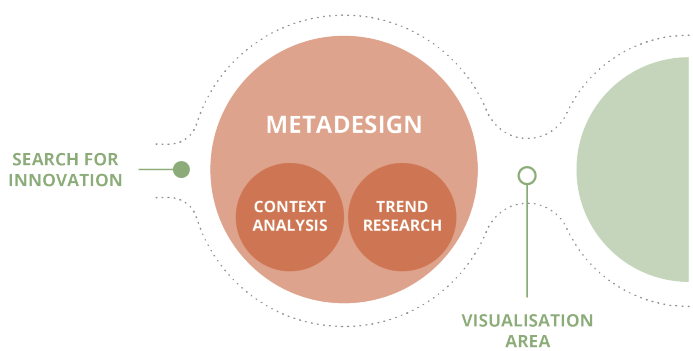

Figure 6. The metadesign input, output, and macro areas

Inside metadesign, trend research focuses on specific context analysis. To qualify as a trend, a phenomenon must show a continuous direction of development over a significant period (Miller, 2006; Vejlgaard, 2008; Rudkin, 2015). By joining quantitative and qualitative analysis, forecasting products' perceptive characteristics (Celi & Colombi, 2020) and interpreting the sociocultural contexts, trend research constructs a deep understanding of the values and behaviours of the collective worldview that then inspire the symbolic look and feel of specific experiences (Hesmondhalgh, 2007). Through their reflective practice, designers identify new meanings in these findings, generating multiple design trajectories (Celi & Colombi, 2020; Raymond, 2019).

These plural trajectories generated by designers result from the reflexivity and abstraction of metadesign. When a holistic understanding of the weak signals in a cultural and social context is applied during trend research, metadesign expands into explorable futures, which include the preferable ones (Celi & Colombi, 2020). This process allows the exploration of design opportunities through innovation and curiosity-driven research that draws inspiration from the meanings devised across contemporary culture (Celaschi & Deserti, 2007).

For designers, analysing trends and their derived meanings is the starting point for defining the themes that will be translated through visualisation processes, e.g., moodboards (Fig.6). The designed product must communicate the values envisioned at this initial phase, for which anticipatory vision is crucial. Design holds the ability to pre-figure future solutions and contexts, "everyone designs who devises courses of action aimed at changing existing situations into preferred ones" (Simon, 1969:55), relating design to a problem-solving ability. Thus, it lies upon the responsibility of the designer to know the present and be aware of the future to envision new perspectives that may chart new evolutionary paths. An integrated design approach is powerful enough to influence behaviour (Miller, 2006).

Celi & Colombi (2020) expose how the design practice departs from the context analysis to have an anticipatory nature by understanding the cultural attitude, evidenced in Figure 6. The pre-figuring and visioning skills required to build future visions can be nurtured through metadesign thanks to its future-thinking direction, a crucial component for futures literacy. In this way, visualisation may suggest multiple potentially viable paths that free the imagination and enable the viewer to think the unthinkable, or rather, the visioning process.

Moodboards as visualisation tools in metadesign research

Recognising the lack of exploration among scholarly research regarding moodboard as tools of visual representation in general, a crucial step in our inquiry included examining two case studies. The first is regarding a Product Design course at Loughborough University, and the second is regarding the Metadesign Course from the Design School at Politecnico di Milano with the Trend Hub group. In both cases, testimonies were collected, and experiments were carried out to examine representation methods. Moodboards and lifestyle boards (a moodboard regarding the end-user) were introduced as strategic tools that anticipate the intangible characteristics of future concepts to be developed.

Both cases evidenced that university students of industrial product design often misunderstood visualisation tools, especially moodboards, using them only for disciplinary duty and undervaluing them. This reveals an imprecise and uncodified approach that leads students to fail to develop emotional, sensory, and meaning-making qualities in their design tasks, depleting their creative drive (Garner & McDonagh-Philp, 2001; Celi & Spagnoli, 2019).

According to the surveys conducted at Loughborough University (McDonagh & Denton, 2004), only a tiny percentage of students use moodboards by effectively integrating them into their design process, even outside university work. Significantly few students can grasp their potential, and most of them develop them at a level that is still too superficial (Setchi & Bouchard, 2010) because they are still too conditioned by their ideas, schemes, and structured beliefs that do not allow for an honest exploration of contexts (Celi, & Spagnoli, 2019).

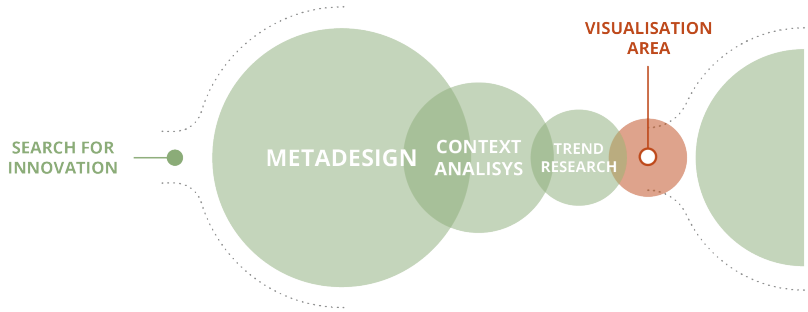

Figure 7. The visualisation area

Regardless of this gap, each convergent phase from most innovation-seeking processes has a primarily visual creation as an output, a synthesis of all the research and analysis. In our case, Figure 7 illustrates how metadesign research converges to a transitive phase of visualisation and production of a vision. This vision is crafted by selecting and organising images that translate and decode the resulting contents of the final trend research phase (Bertola et al., 2018).

Indeed, crafting a moodboard usually departs from the resulting concepts of the trend research phase. Specific iconographic material that mirrors what influences present culture is selected, searching to translate the outcomes obtained so far. By visualising the results, designers construct and synthesise these concepts into a single artefact, the moodboard. Various characteristics come into play for its creation, where visual, tactile, and perceptual suggestions are meant to inspire future choices in the design process. These suggestions embody colour, material, texture, finishes, form, semantic, or evocative implications.

Within the design process, moodboards hold functions related to strategic, inspirational, and communicative qualities:

The designer's strategic use of moodboards bridges the preliminary research and the concept generation, remaining fundamental in shaping the vision that will form future design scenarios[1]. These produce the first formal representation of the product under certain actionable and tangible qualities.

Achieving a novel vision that includes futures within design education finds common ground in metadesign, where the anticipatory agency within moodboards is twofold. On the one hand, it departs from the bases of trend research, which is a foresight practice in itself, proving to be a strategic tool for anticipating the needs and desires of future users. On the other hand, moodboards are crucial tools for building a future vision (Celi, 2012) as they visually summarise and enable the exploration of possible futures, aiding in defining the components of the project's concept.

The inspirational and exploratory quality enables the codification of new values and behaviours, crucial for developing creative and analytical skills in design apprentices. Identifying new problems, needs, and contextual values, make them functional in the education of design apprentices as they foster the development of their analytical and creative skills. These "represent a liberating experimental phase that puts you in touch with your perceptions about the brief and to visualise them; they enable you to recognise the problem as it comes into view and to envision scenarios or future lifestyles" (Celi, 2012).

Communication skills are also harnessed since moodboards stimulate specific competencies and sensitivities related to the design practice (Setchi & Bouchard, 2010). Indeed, the externalisation of mental images during the creative process is typical of the designer's work, in addition to supporting design thinking, representations serve to communicate ideas to colleagues, clients, or stakeholders (Tovey, 1989, 2002; Tovey et al., 2003; Miller, 2006; Vinck, 2011; Celi & Colombi, 2017).

Finally, they also support facilitating internal dialogue as designers create languages from keywords, colours and iconographic references that express their feelings, inspire their creativity, and help communicate ideas to colleagues, clients, or professors (Setchi & Bouchard, 2010). They are one type of visual representation as tools of

exploratory value, helping design students enrich and develop their communicative language, enabling them to share their creativity and display their work.

As a visual tool that can transcend into communicating contents and emotions, it finds its use close to designers, which use numerous images throughout the whole design process (Celi, 2012). The integrated use of moodboards makes it easier to form relevant and innovative proposals, inspiring students and allowing them to achieve a depth of analysis of phenomena that is difficult to explore solely through words. This composition of images filtered by textures and colours, representing feelings, reproduces sensations that sum up into a design concept (Celi, 2012). Visual communication takes on a priority role, becoming a proper metadesign tool that goes beyond the project and actively contributes to defining the possible creative and stylistic directions that will be developed.

The visualisation process implies a synesthetic translation in which linguistic-verbal signs are interpreted employing visual systems to communicate contents belonging to a semantic world that would otherwise be inaccessible (Penati, 2016). This creates a type of language with an evocative capacity that manages to communicate meanings through symbols encoded in a collective imaginary, all in a particular dimension of abstraction (Maselli & Mouri, 2021). In this sense, connecting ideas and concepts applied in composition through principles of similarity, contrast, and contiguity stimulates the perceptual and interpretive thinking of both the maker and the viewer of the board.

Making research visible means reorganising information, bringing order to thoughts by evidencing the connections found. Indeed, externalising mental representations aids thinking and facilitates understanding and reasoning by producing meaning and significance (Celi & Rizzo, 2016), which can become a source of inspiration (Setchi & Bouchard, 2010). In general, visualisation tools are effective because they empower the imagination and refine visions on certain semantic aspects that are still unclear.

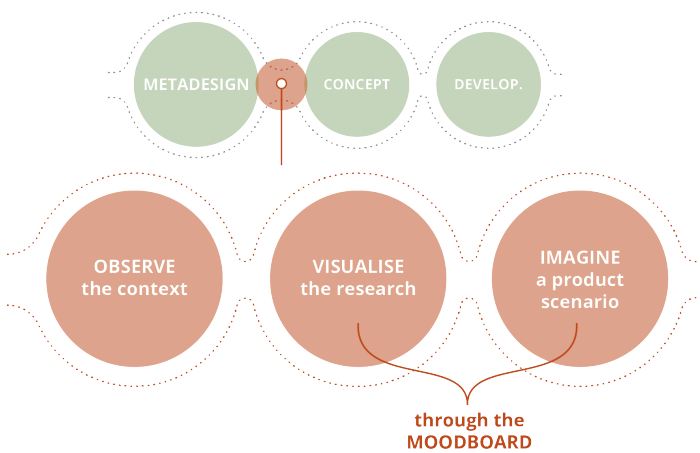

Figure 8. Levels of visual stimulation

Celi (2012) devises three levels of visual stimulation; viewing, visualising, and visioning, as depicted in Figure 8. Viewing refers to observing reality and is usually employed during the research and learning phase. Visualising is used as a comprehension tool that expresses and describes the qualitative results of the research. Finally, the vision is the "ability to think about or plan the future with imagination or wisdom (…) to indicate the horizons at which a project may aspire" (Celi, 2012).

There is an explicit parallelism between the levels of visual stimulation and the metadesign's stages, where students first observe the context, visualise the findings, and envision a proposal. The last phase of scenario, project or product envisioning is aided using moodboards, helping to synthesise the contents. The production of a good quality visual asset needs to find sense within a system of meaning to produce effective results. The progressive evolution of envisioning and metacognitive abilities complements themselves, which is crucial for the design of

students' education (Celi, 2012).

Guidelines and their creation

Having established that the ability to decipher mental images is a fundamental skille of being a designer, it justifies its further exploration. The introduction of guidelines could improve the workflow of design apprentices, who consistently manage and transfer emotional value and meaning from research to concepts until they internalise the methodology making it part of their own design process. After thorough desk research, case study analysis, and the consulting project, a draft of the guidelines was produced and presented to students from a Product Design Metadesign course. This section will illustrate the approach behind the definition of the guidelines provided to the students and how the consultancy project influenced the process.

A research lab carried out the company-driven consulting project within a design school. Conversely to the usual methodological approach that introduces knowledge from the academic field into the working practice, applying a reverse direction offers two advantages. On the one hand, it gives students a chance to experience a tool tested in a setting where they will belong soon. On the other hand, it enables them to witness the influence and efficiency of using moodboards in their design process. This methodology provided the necessary depth to understand how these guidelines would be applied in a professional and practical context.

Various methods were used within the consulting project, including desk research, case studies, benchmarking reports, and findings mapping. The project's aim regarded emerging trends in the given area of expertise. Through diverse levels of investigation, the research lab identified challenges and opportunities and translated them into concrete results. The findings were mapped and filtered to reflect the values and characteristics to design coherently.

The outputs of the consulting project regarded colour, material, and finish (CMF) boards, design insights, and inspirational content for in-house use, where moodboards were crucial for visualising and communicating the common aesthetics and values associated with the findings. The project searched to encourage inspiration by expanding sources and stimuli, representing specific concepts referring to contexts open enough for personal interpretation while stimulating an overall direction.

Several moodboards were analysed as case studies to enrich the research, making it possible to investigate multiple aspects that would otherwise have remained unclear due to the lack of coverage in theoretical practices. Drawing from existing design tools, including moodboards from real design studio projects and educational experiments, allowed focusing on the composition and the coherence between the final product and the semi-elaborated moodboard (Edwards et al., 2010; Velasquez-Posada, 2019; Munk et al., 2020; Koch et al., 2020; Reis & Merino, 2021).

Among the findings, the analysis shows that the chromatic filter is a helpful guide for selecting and matching images and is the first powerful element of evocation (Bertola et al., 2018) capable of instantly communicating the desired imagery. The concept of coherence and a fundamental capacity with that of the narrative is also repeatedly taken up: cross-references and stimuli must be assembled to obtain a detailed description of the ideal world dominated by the trend in question.

While carrying out the consulting project, the entire research and visualisation process was documented in detail. This provided a solid basis for building a methodology for visualising trends, creating moodboards, and passing the testimony to the students to show a concrete example from a professional environment. As a result, an essential methodological guide was extrapolated as a template created by combining the information from the case studies and the application project, guiding the visualisation and composition of a moodboard.

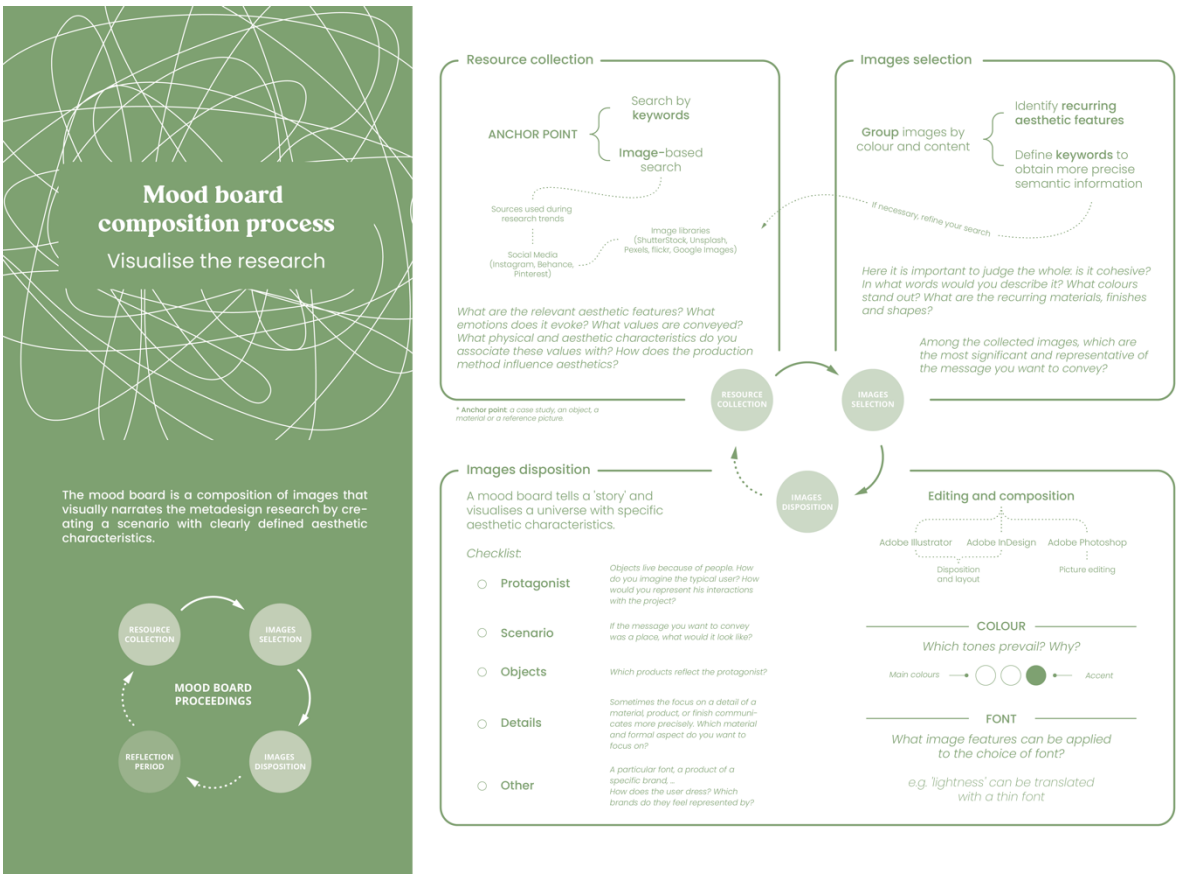

Figure 9. Moodboard creation guidelines

The guidelines (Fig. 9) deal specifically with two types of communicative coding based on visualisation tools such as moodboards: the iconic and the graphic. The iconic code uses the image broadly to describe something. In contrast, the graphic code is based on the composition of elements on the page, such as the orientation and arrangement of images, choice of font, format, etc. (Campagnaro, 2012).

The template is based on the methodological path of moodboard creation, which has rarely been made explicit before, as there are no such specific guides on the subject in the current scientific literature. Each stage presents a set of practical actions to be followed, complemented by a list of useful tools (such as software or websites) for different purposes. The followed educational approach involves questions that ignite students' brainstorming to generate a sufficiently abstract representation that leaves room for exploration and critical thinking.

The first step is necessarily the collection of visual resources. To establish the right keywords and images for the research, it is essential to ask the students what values and emotions they want to convey and which physical and aesthetic features they associate these values and emotions with. The second step is the selection of images that better represent their message among the collected ones. This is done by grouping their visual resources, recurring to aesthetic features and refining their keywords, if necessary. This step aims to develop a cohesive selection that expresses the defined values of the project.

The process ends with editing and composing the selected images. Since moodboards tell a story and display a universe with a distinct aesthetic, a checklist is proposed to help students avoid missing essential descriptive elements. Each item on the list is complemented by an explanation and questions clarifying its relevancy regarding the narrative. Rounding out the section is a reminder on how to choose the font and colour palette wisely, hoping for a result as a "visual unicum" (Bertola et al., 2018) capable of immediately and unequivocally communicating the imagined ideal scenario and the design direction in terms of colours, shapes, materials, and finishes required for

the next phase.

First test and results

The last step in this research process was introducing and testing the guidelines among undergraduate product design students during the metadesign course. The pilot testing of the tool enabled the understanding of its effectiveness and the implications it held along the design process, throwing valuable insight and feedback observed during classes and revisions and from data collected from a survey.

The metadesign course is a one-semester studio that joins theory and practice to deepen the cognitive experience and reflection of every step of the design process, concluding on the internalisation and development of one's method (Celi, 2012). Students participate in small teams and are informed on a brief that searches to stimulate the phases of understanding the context, exploring existing solutions, and creating a concept. The lessons include theory and practical revisions oriented towards addressing "practical indications for their work", including methodologies, information, research communication tools, and visualisation instruments, among others (Celi, 2012).

The exercise briefed the students to detect place-specific values inspired by their city. The second part of the exercise researched a specific brand, where other design requirements were drawn to create the group's proposal and concept. The theoretical lesson on moodboards was introduced at the beginning of the second part, with the proposed guidelines and examples provided during the lecture. The objective was to use the moodboard to explore and expose the research findings and the group's concept proposal.

The survey was provided at the end of the course journey. Upon its completion, data was gathered from a questionnaire with 55 respondents out of 70 students. The questionnaire aimed to investigate students' perceptions of the moodboards and the effectiveness of the guidelines provided. This lays the foundation for developing the guidelines into a tool; it is still a methodological guide in an evolving stage that needs to be subject to further testing to make it robust and reliable.

The survey design was composed mainly of closed, specific questions (only two questions had open-ended answers) for two main reasons: to collect quantitative data regarding different aspects of moodboards and to make it faster and easier for students in pursuit of obtaining as many answers as possible. The form was divided into three sections, the first being an introductory part, collecting consent for data processing and the respondent's group number; this way, the responses could be compared within the group and confront them with the design results. The second part intended to understand the respondent's experience with moodboards as a design tool. The final section explored the use and clarity of the guidelines.

The numerous responses were analysed both in their entirety and concerning the group work, comparing the final moodboards and the draft versions developed during the workshop. The feedback collected acts as valuable input in the discussion to improve the teaching strategy of the course and enrich the conversation regarding these visualisation tools and their roles in design education.

The first set of questions explored moodboards as a tool, where 96,4% found the scope of moodboards within the design process to be clear after the exercise. Questions regarding the project's vision showed the most positive responses when specified to help define the message. These answers suggest that the moodboard facilitated consensus within the group, allowing them to make decisions around the vision. Another 60% of respondents found the moodboard useful to make the research tangible. This does not mean that every group used moodboards to communicate their ideas with their peers; 23% did not find it helpful, and 27% were indifferent. This might be due to the tool's novelty and the fact that group dynamics are different, usually using more immediate methods.

The answers under the category of Moodboards to define the project's context, i.e.: defining the project's guidelines, expose that 36% of students found it indifferent, and 13% not useful. This might be due to the lack of maturity in developing an individual methodology and design criteria. It is challenging to find a defined framework, having had counted experiences with design briefs. Another observation is that the exercise was not focused on problem finding and setting but working on values instead. Nevertheless, many groups used small-scale moodboards with fewer images and more concrete references to expose the concept and define the project's aesthetics. It was extensively used to support mid-deliveries and revisions with the faculty.

The questions regarding the exploratory function evidenced an overall positive response towards the fact that

moodboards helped gather inspiration with 80% and visualisation of its potential with 61%. Half of the students found it helpful to discover new resources, showing that many searches were probably based on previously known references or abstract images with no conceptual content, such as textures or generic stock images.

Moodboards are regarded as a shared process in their construction, probably due to their summarising nature. This might also be interpreted as an essential part of the process, an inflexion point where every group member's opinion counts. This is presumably also why 60% of students declared to have done six or more moodboards before the final version was achieved. The first draft tests and the individual boards used to confront ideas within the group evidence that it is a practical tool based on learning by doing; until it is not executed and tested, one may not know if the composition works. It is an iterative process that takes on many trials and errors.

The second section, regarding the use and clarity of the guidelines provided to the students, proved that 90,9% used them. Reading into the tool's effectiveness, 80% of the students found the indications clear. In comparison, the remaining 20% show negative answers, most based on the need to provide examples with the guide. During the creation of the guidelines, one of the challenges faced was how to introduce the information from the consulting project while still respecting the privacy agreements; this led to a vague definition of how to choose the images, especially since it is a very subjective process that requires a trained skill and design criteria. Unfortunately, this meant our challenges at this stage were carried to the guidelines, affecting students' perception and understanding of them.

Half of the students responded positively when asked about the definition of their moodboard creation methodology, while 36% were indifferent. Such a high positive response may be because using a consulting project to construct the guidelines provided certain robustness and coherence. This is evidenced due to its practical results, giving them the potential to become serious and applicable tools instead of being perceived as a waste of time, as picked up from the comments from Loughborough and Politecnico University.

Finally, 86% of the respondents responded positively when asked about the guideline's clarity in its instructions and content, evidencing that breaking up the steps and criteria that go into the moodboard composition was efficient. Other answers suggest that the guidelines were too generic and that a practical activity in class would have been helpful for its complete understanding.

Conclusion

The role of moodboards is manifold; not only are they a creative tool, but design products that result from a precise process that contributes to the creation of innovation.

The testing phase in the classroom has provided valuable insights, such as the need for visual and practical examples; the necessity of exercising in the classroom also suggests a diverse didactic experience where analogue methods could also bring additional value, highlighting the criticality and the need to include innovate aspects in teaching. The latter conclusion can be considered one of the possible starting points for a discussion on educational changes.

Creating the guidelines from a reverse methodological approach highlighted their importance and purpose by placing them in a professional context. The concreteness of the consultancy project with a company acted as a tangible proof of concept. Not only does a leading company show interest in investing in metadesign research, but also, we see how research can influence the entire design process.

Regarding product design, we observed how a more pragmatic and less theoretical approach could facilitate understanding and accelerate learning. Specifically, turning an actual corporate design project into teaching material was the beginning of a transition that could bring innovation to an educational system that is still mostly theoretical. Just like described in our research and stated by one of the survey respondents, the development of the guidelines exposes that moodboards are also an instrument, not an endpoint.

The level of subjectivity in moodboards limits their theoretical and academic coverage. Nevertheless, they provide a relevant contribution to design futures literacy allowing design apprentices to expose their style, visualising their personality and creativity. It also offers countless visions, evidencing there is no one correct way of doing design. Because moodboards enable many forms of expression, the risk is having an excessively abstract language that could limit its effectiveness in a multicultural team. Nevertheless, it is recognisable that it influences

the rest of the development process, enabling the design of the sensory effect of the project and expressing them in a way in which words could never do so. In our experience, it is clear that the use of moodboards helps define the design brief and framework of the project.

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Notes

1- Design scenarios derive from the strategic prognostication agency of scenarios (Shwartz, 1991), where the combination of futures and possibility map alternative contexts and actions (De Jouvenel, 1967). In this case design joins its agency to respond to a product's function, aesthetic and embedded values (Colombi & Zindato, 2019). Their scope is to create innovation paths that consider their design qualities (I.e.: materials, processes, technology, shape), and their strategic direction (Celaschi, 2007), while supporting decision making (Evans & Somerville, 2005). Especially useful to face uncertain and complex environments, they anticipate possible problems and solutions while corresponding to their definitions through designer's reflective qualities (Colombi & Zindato, 2019).

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